

BROOKVILLE TAILWATER  
Franklin County  
2004 and 2005 Fish Management Report

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## EXECUTIVE SUMMARY

- The Brookville tailwater is approximately two mi in length and considered the portion of the East Fork Whitewater River below Brookville Reservoir to its confluence with the West Fork Whitewater River.
- In 2004, 27 brown trout that ranged in length from 6.9 to 14.8 in and 21 rainbow trout that ranged in length from 11.0 to 14.7 in were collected.
- In 2005, 34 brown trout that ranged in length from 9.2 to 15.3 in and 6 rainbow trout that ranged in length from 11.5 to 13.8 in were collected.
- Carry-over of brown trout was observed in 2004 and 2005. Eight of the brown trout collected in 2004 and one in 2005 appeared to be from the previous years' stockings.
- New regulations for brown trout were implemented on the Brookville tailwater in 2005 to facilitate annual carry-over of brown trout. Anglers may only harvest one brown trout per day, which must be at least 18 in long.
- The temperature regime of the Brookville tailwater is one of the most limiting factors affecting carry-over of brown trout from year to year. Therefore, ACOE and DFW are working together to determine a feasible tailwater temperature regime that would maximize survival and promote brown trout carry-over from year to year.
- The next survey of the Brookville tailwater trout fishery is scheduled for 2006 and will focus on brown trout survival.

## INTRODUCTION

Brookville Reservoir is a 5,260-acre Army Corps of Engineers (ACOE) flood-control impoundment. The tailwater, which is approximately two mi in length, is considered the portion of the East Fork Whitewater River below the dam to its confluence with the West Fork Whitewater River.

The Division of Fish and Wildlife (DFW) stocked rainbow and brown trout in the Brookville tailwater from 1976 to 1983. During this time, while the trout stockings were viewed primarily as “put-and-take”, it was anticipated that some of the brown trout might carry-over and increase the quality of the fishery. Because few, if any, brown trout carried over from year to year, brown trout stockings ceased. Since 1984, the DFW has only stocked RBT with an annual stocking goal of 1,500 fish (11.0 in average). In the spring of 2001, with approval from the DFW, the Central Indiana chapter of Trout Unlimited (CITU) began stocking brown trout in the Brookville tailwater in addition to the stocking of rainbow trout by DFW. The current stocking goal is 2,000 brown trout per year. Since 2001, CITU has stocked 12,600 brown trout (Table 1).

Shortly after brown trout stockings were initiated by CITU, requests were made to implement special regulations to facilitate carry-over of brown trout from year to year. Following the 2003 fisheries survey of the tailwater, brown trout carry-over was documented and special regulations were proposed. In 2005, regulations were adopted on the Brookville tailwater to limit harvest of brown trout to one fish per day of at least 18 in in length.

Fisheries surveys of the Brookville tailwater were conducted in both 2004 and 2005. The primary goal of each survey was to evaluate brown trout carry-over and to document if natural reproduction of brown trout is occurring.

## METHODS

The Brookville tailwater was sampled on July 13, 2004 and July 19, 2005. Station 1 sampling started at a side channel (immediately below the reservoir) and continued upstream to the end of the concrete spillway. Station 2 was located in the Brookville Town Park; sampling started at the head of the riffle on the downstream edge of the park property and continued upstream to the first riffle where the stream was constricted (obvious gradient change). Station 3 sampling began upstream of the highway 52 bridge and continued upstream to the first riffle. All

three stations were sampled in 2004, but only stations 1 and 2 were sampled in 2005 due to equipment failure.

A DC barge electrofisher was used to collect fish with a crew of three people. Only rainbow and brown trout were collected. Fish collected were measured to the nearest 0.1 in and weighed to the nearest 0.01 lb. Water temperature and dissolved oxygen were taken at each station (Table 2).

## RESULTS

### 2004 Survey

Twenty-seven brown trout (Figure 1) that weighed 10.9 lbs were collected. Eighty-one percent of the brown trout were collected at station 2. Brown trout ranged in length from 6.9 to 14.8 in and averaged 9.6 in. The size range of brown trout stocked in 2004 was 6.0 to 7.0 in. Approximately 70% of the brown trout collected were between 7.0 and 9.0 in and likely from the 2004 stocking. The remaining brown trout (11.5 to 15.0 in) were likely fish that carried over from the 2003 stocking.

Twenty-one rainbow trout that weighed 19.2 lbs were collected. Rainbow trout ranged in length from 11.0 to 14.7 in and averaged 13.4 in. The average size of rainbow trout stocked in April 2004 was 11.1 in. From the length range of the rainbow trout collected, it appears that all of these fish were from the 2004 stocking.

### 2005 Survey

Thirty-four brown trout that weighed a total of 17.4 lbs were collected (Figure 1). Ninety-seven percent of the brown trout were collected at station 2. Brown trout ranged in length from 9.2 to 15.3 in and averaged 10.6 in. The size range of brown trout stocked in 2005 was 6.0 to 8.0 in. Ninety-seven percent of the brown trout collected ranged in length from 9.0 to 12.0 in and were likely from the 2005 stocking. Carry-over from the 2004 stocking appeared to be minimal since only one “large” fish (15.3 in) was collected.

Only six rainbow trout that weighed 5.7 lbs were collected. The length range of rainbow trout collected was 11.5 to 13.8 in. These fish were likely from the May 2005 stocking given that the average length at stocking was 10.9 in.

## DISCUSSION

Carry-over of brown trout in the Brookville tailwater was seen in 2004 and 2005. Eight of the brown trout collected in 2004 and one in 2005 appeared to be fish from the previous year's stockings. The remaining brown trout collected were likely fish stocked during the spring of each survey year. The length frequency of brown trout (Figure 1) did not indicate any natural reproduction.

The temperature regime of the Brookville tailwater is one of the most limiting factors affecting carry-over of brown trout from year to year. Because Brookville Reservoir is utilized for flood control, the tailwater temperature regime is largely dictated by the timing and volume of water released from the reservoir. In 2005, the ACOE and DFW had dialogue pertaining to the temperature regime of the Brookville tailwater. ACOE expressed interest in updating the temperature guide curve for the tailwater in order to better accommodate the needs of the fishery. The current temperature guide curve for the Brookville tailwater that the ACOE operates under is satisfactory. However, in order to enhance the fishery, water temperatures in the tailwater ideally should not exceed 65°F during the summer and 55°F during the spring and fall. This temperature regime would likely maximize survival and promote brown trout carry-over from year to year. Future collaboration between ACOE and DFW is necessary to determine if the suggested temperature regime is feasible.

Sampling in 2003 was conducted at a discharge of 250 cfs, making sampling difficult. Sampling was less difficult when discharge measured 47 cfs in 2004 and 104 cfs in 2005. Therefore, sampling should continue to take place at a discharge not exceeding 100 cfs to ensure that a representative sample is collected.

The next survey of the Brookville tailwater trout fishery is scheduled for 2006 and will focus on brown trout survival. Even though natural reproduction of brown trout has not been documented, future sampling should continue to look for signs of reproduction.

New regulations for brown trout were implemented on the Brookville tailwater in 2005 to facilitate carry-over of stocked fish from year to year. Anglers may only harvest one brown trout per day, which must be at least 18 in long. Rainbow trout must be at least 7 in long. The daily bag limit for trout (rainbow and brown in aggregate) is five fish per day. The trout season for inland streams, other than Lake Michigan tributaries, begins at 0500 on the last Saturday in April and goes through December 31.

## RECOMMENDATIONS

- Collaborate with the ACOE to determine if the present guide curve is adequate in providing maximum carry-over of brown trout in the tailwater.
- Sampling should be conducted at a discharge of 100 cfs or less.
- Re-survey the tailwater in 2006 focusing on the carry-over of brown trout and the occurrence of natural reproduction.

Submitted by: Christopher C. Long, Assistant Fisheries Biologist

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Date: September 1, 2006

Table 1. Brown trout stockings in the Brookville tailwater from 2001 to 2005.

Year	Date	No. Stocked	Size Range (in)
2001	May	2,000	7.0 – 8.0
	October	2,000	3.0 – 4.0
2002	May	2,000	6.0
2003	May	2,000	8.0
2004	April	2,000	6.0 – 7.0
2005	May	2,600	6.0 – 8.0

Table 2. Dissolved oxygen (parts per million), water temperature, station length, and sampling effort on the Brookville tailwater in 2004 and 2005.

Year	Station	Dissolved Oxygen (ppm)	Water Temperature (°F)	Station Length (ft)	Sampling Effort (h)
2004	1	11.4	70.5	720	0.36
	2	12.3	73.8	550	0.34
	3	11.4	76.1	333	not recorded
2005	1	10.0	59.9	675	0.27
	2	14.0	64.9	635	0.29

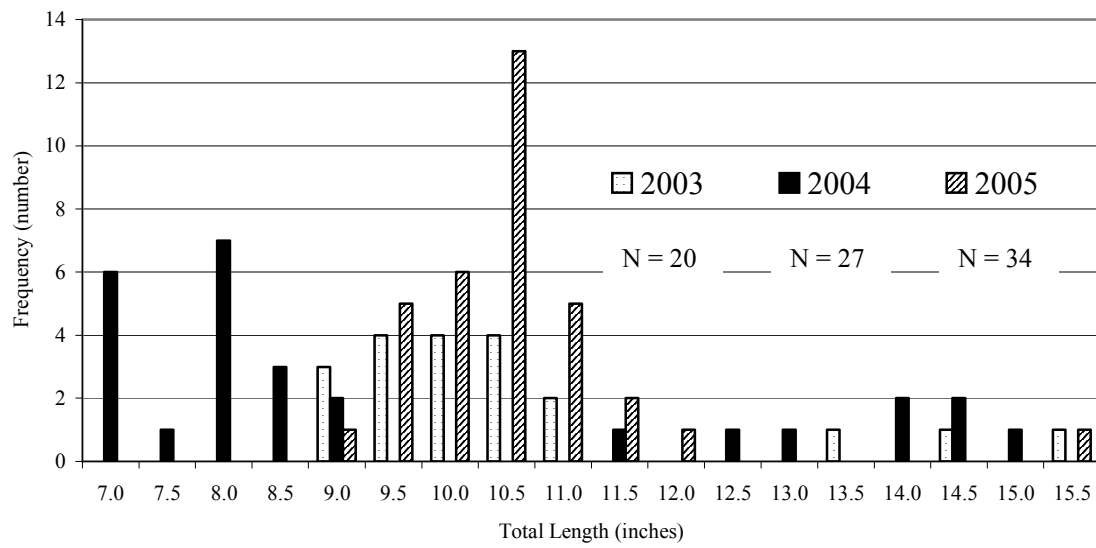


Figure 1. Length frequency of brown trout collected in the Brookville tailwater from 2003 to 2005.